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**METHOD AND APPARATUS FOR DYNAMICALLY ADJUSTING  
A NON-LINEAR OVERDRIVE PACING RESPONSE FUNCTION**

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**Abstract**

Dynamic overdrive pacing adjustment techniques are described for use in implantable cardiac stimulation devices. In a first technique, an overdrive pacing unit of a microcontroller of the implantable device operates to optimize various control parameters that affect overdrive pacing so as to achieve a desired degree of overdrive pacing for the particular patient in which the stimulation device is implanted. Parameters to be optimized include the number of overdrive beats paced once overdrive pacing is triggered, the overdrive pacing response function, the recovery rate, and various base rates. The control parameters are adjusted in a hierarchical order of priority until the desired degree of overdrive pacing is achieved. Adjustment of the number of overdrive beats, the recovery rate, and various base rates is iteratively performed by using incremental numerical adjustments. Adjustment of the overdrive pacing response function may be performed by selecting among a set of fixed predetermined linear response functions. In a second technique, the overdrive pacing unit operates to optimize the shape of a single non-linear dynamic overdrive pacing response function so as to achieve the desired degree of overdrive pacing for the patient. The second technique may either be employed alone or in combination with the first, hierarchical optimization technique.